UnderSea Technology Index, Volume 9, 1968

This is a three-part instant-reference index of technical material and news appearing in Volume 9, 1968. Part 1, Monthly Contents; Part 2, Authors; Part 3, Subject Index. Numbers following title, author or subject are month and page number

PART 1—MONTHLY CONTENTS

TITLE **PAGE**

JANUARY 1968

The Not So Faint of Heart 9
Capital Report 12
Coast Guard Continues Pacific Oceanographic Programs 16
Research 22
International 24
Navy Currents 26
Offshore News 32
1967 Review & 1968 Forecast Introduction 34
Radical Approaches for A Conservative Science and Technology 35
Prospectors Roam The Seas 38
Subsea Oil Production Welcomes Undersea Technology 40
Flank Speed Ahead For Sea Grant Program 42
Soviets Increase Naval Presence Around Globe 47
The Systems Approach to Fisheries Developments 51
Commission to Seek Comments on Recommendations 55
Marine Science Affairs—A Year In Review 57
Investment Opportunities Grow With Increased Ocean Interest 59
Corrosion Resistance Fastener Material 76

FEBRUARY 1968

The Right Steps 9
Capital Report 13
International 15
Navy Currents 16
Research 18
Offshore News 22
Designing Propulsion Motors for Undersea Craft 24
The Long Way Home, OCEANOGRAPHER'S expeditionary voyage 28
Titanium Goes Undersea 31
Bioluminescence of The Ocean 33
The Reaction of Adult Sharks To a Recovery Flotation Bag 35
Largest Private Research Vessel in Operation, GULFREX 41
MTS Delaware Valley Section Symposium "Ocean Sciences & Engineering of The Atlantic Shelf," March 1968 43
Modular Approach to Hydrophone Systems 47
Scripps' New Giant Buoy Boasts Helicopter Pad 49

MARCH 1968

The Shape of Things to Come 9
Capital Report 13
International 15
Navy Currents 17
Research 19
Offshore News 21
Submersible Manipulator Developments 22
Profile—Honeywell Marine Systems Center The Wide World of Acoustics 26
Marine Science Affairs—A Year of Plans & Progress 28
A New Technique in Sand Coring 35
Experts Urge Added Commitment to Ocean Programs 38
Instrumetnation For A 1000-Foot Saturation Diving System 41
Advanced Program for American Society for Oceanography Pacific Western Region Conference, April 1968. 45
1000-Foot Hydrogen/Oxygen Dive To Test For Narcosis 49

APRIL 1968

Opportunities Unlimited 9
Capital Report 13
International 15
Navy Currents 17
Offshore News 21
Research 23
Brown & Root Continues Expansion of Marine Services 24
Search For the "Stevenson" 26
MTS Atlantic Shelf Symposium Stresses Need For New Legal Definitions 32
Standardizing Calibration of Deep Sea Thermometers 33
SEACHIPS—A New Sea Food Product 36
Soviets Accelerate Undersea Studies 46

MAY 1968

Inventory & Audit: IV 13
Capital Report 17
AUTEC I & II Submersibles Feature Ejection Capsules 21
International 23
Research 25
Navy Currents 27
Offshore News 32
First Full Scale FPC Plant Dedicated In New Bedford 47
Acoustic Imaging For Viewing in Turbid Water 48
Ocean Survey With Instrumented Underwater Missiles 52
Scouting For Albacore With Surface Salinity Data 60
Oceanographic Market Pegged at $6.5 Billion 62
A Critical Look at Marine Technology 4th Annual MTS Conference and Exhibit, July 1968 66
Personnel Sought for JOIDES 89
Fluidic Bow Thruster—No Moving Parts 99

JUNE 1968

Solid Precedents 9
Capital Report 15
Research 18
Navy Currents 21
International 23
Offshore News 25
Navy ASRs Feature Western Gear Heavy Handling Equipment 28
Acoustic Telemetry and Control 30
Thermoplastic Syntactic Foam For Structural Void Fillers 33
Nuclear Powered, Acoustic Controlled Wellhead 35
DDT Threatens Ocean Life, Chemical Balance of Atmosphere 37
Students In Two Day Saturation Dive 39
Nuclear Cratering Could Create Oil Storage Tanks 43
Navy Swimmer Support Contracts Total $8 Million 43
Fiberglas Breastplate 44
Snap-Tite Supplies Deepstar Jettison System 45

JULY 1968

Serious Lapses in Judgement 9
Capital Report 13
International 15
DELOS Mobile Instrumented Steady Sea Station 16
Navy Currents 17
Research 19
Offshore Drill Boom Dwarfs Forecasts 20
Offshore News 21
Profile—Yardney Electric Corp. From Submarines to Automobiles, Weight Saved by Use of Silver-Zinc Batteries 24
Deep Water Sonar Transducers 27
A-C Power System for DSRV 34
World Record Reported for Compressed Air Dive 42

AUGUST 1968

Refreshing Economy 8
Capital Report 12
Navy Currents 15
International 17
Research 21
Offshore News 23
SeaLab III Introduction 25
SeaLab III—A Dramatic Change in Deep Ocean Experimentation 26
SeaLab III Complex 28
Ocean Floor Experiments (SeaLab III) 34
Medical Aspects of Undersea Living (SeaLab III) 36
Aquanaut Training and Equipment, (SeaLab III) 39
Logistic and Surface Support, (SeaLab III) 46
SeaLab III Contractors 49
Industry-Government Cooperation Key to Oceanography Progress 53
Snodgrass and Sippican Corp. Honored With Compass Awards 55

SEPTEMBER 1968

In Numbers There is Strength 8
Capital Report 15
Navy Currents 17
Research 18
International 21
Offshore News 23
Pace Quickens In $2.25 Billion Offshore Petroleum Operations 28
Diving Becoming Big Business 32
Microwave Positioning System Gives High Accuracy Regardless of Weather 37
MTS Sponsors Two Meetings On Marine Data Information, Oct. 31-Nov. 1, 1968 39
Acoustic Position Sensing System 53
North Sea Drilling—Boom or Bust? 55
Offshore Mining and Ocean Mineral Recovery 59
Underwater Pipe Anchor 64
Underwater Wellhead Relocator 64

OCTOBER 1968

The Genius in the Light Grey Jacket 8
Capital Report 15
Navy Currents 17
Research 19
International 21
Simulating Behavior of the DSRV 22
Offshore Trends 23
Woods Hole Developing 3rd Shipboard Computer System 24
Data Processing For Controlled Energy Acoustic Sources 28
Marine Computer Uses Diversified 31
Underwater Telephone Is Versatile Data Link 34
Digital Computer Applications in the Marine Sciences 35
Submerged Sphere is Oil Production Center 39
Wooden Power-Sail Ship On Way to Antarctic 40
Inverted Pinger Improves Depth Measuring Accuracy 41
IBM 1800 Computer on Scripps' ARGO 42
Computer Analysis and Design of Undersea Cable Systems 43
Digital Data Acquisition Systems 56

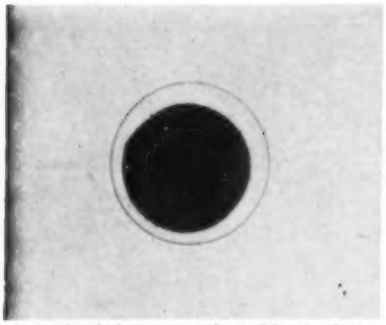
NOVEMBER 1968

The Numbers Game 13
Capital Report 17
Navy Currents 21
International 27
Research 29
Offshore Trends 30
Ultrasonic Doppler Flowmeter Monitors Bloodstream Bubbles 34
Opportunity For Scientist Cruises 36
Doppler Sonar Accuracy Demonstrated 41
Japan Leads In World Tanker Construction 41
"Barrier" Concept Complements Mobile Systems In Antisubmarine Warfare 42
Poseidon Underwater Tests 52
Soviet Naval Emphasis Shifts 48
Marriage of Electronics and Acoustics At Hazeltine 54
High Pressure Under Gulf Caused by Trapped Water 58
Aircraft Pump Adapted for Undersea Use 59
Underwater Acoustic Ranging System 61
Signal Generator For Sonobuoy Testing 63
P-3C Orion Flies Navy's A-New ASW Defense System 64
PISCES II Joins Submersible Fleet 75
Geotech's New Digital Data Acquisition Systems 76
Ubiquitous Laser—A New Shipbuilding Tool 91
General Bathymetric Chart Available 91

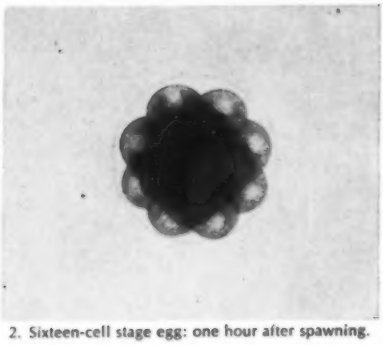
DECEMBER 1968

An Open Letter (editorial) 8
Soundings 13
Capital Report 15
Navy Currents 17
Research 19

(continued on page 46)



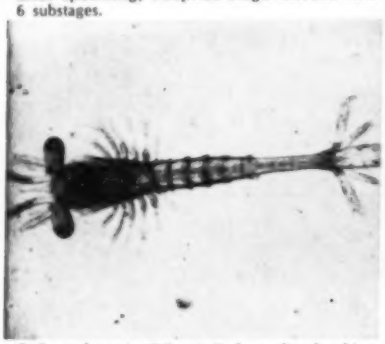
1. Fertilized shrimp egg (diam. 0.3mm) minutes after spawning.



2. Sixteen-cell stage egg: one hour after spawning.

3. Fourth nauplius (body length 0.5mm) 17 hours after spawning; nauplius stage divided into 6 substages.

4. Third zoea (2.5mm) 5 days after hatching; zoea stage divided into 3 substages.



5. Second mysis (3.5mm) 7 days after hatching; mysis stage divided into 3 substages.

6. First post larval stage (4.5mm) 9 days after hatching; post larval stage has not substaged but continues to molt.

for underwater development check PANAMA CITY, FLORIDA

In only a few months at Panama City, the research team of Akima International has proven that shrimp cultivation is possible in waters of the Gulf Coast. Studies by the Eastern Gulf Marine Laboratory and Texas A&M have recently revealed a preponderance of marlin and sailfish in Gulf offshore waters — and thus opened a new sports mecca. And daily the U. S. Navy Mine Defense Laboratory here is solving highly technical underwater problems for the Navy. These and others represent a growing oceanographic community with ideal local conditions. And there's room for other projects. For more information in confidence, write Warfield Bennett, Panama City Committee of 100, Box 1850-UT, Panama City, Florida 32401 or call AC 904/785-8732.

Circle No. 27 on Inquiry Card

(continued from page 46)

Cableless Underwater TV Uses Acoustic Transmission 20
DMS Reports Military Oceanographic Market 21
Seawater Powers New Battery 22
International 23
Offshore Trends 25
Pressurized Batteries Ride Outside Deepsea Hulls 26
Ship Completes Mineral Search Cruise In Alaska 28
Nuclear Thermoelectric Generators Power Submerged Buoys 30
Power Generation for Advanced Submersibles 32
Profile — Edo Corporation 34
UST Annual Index, Vol. 9, 1968 41

PART 2—AUTHORS

Abel, Robert 1/42
Alarie, A. P. 6/31

Beaufort, Dr. Roger 1/24, 2/15, 3/15, 4/15, 5/23, 6/23, 7/15, 8/17, 9/21, 10/21, 11/27, 12/23
Bellin, J. L. S. 5/48
Bond, Capt. George F. 8/36
Booda, Larry L. 1/9-26, 2/9-16, 3/9-17-26, 4/9-17, 5/13-27, 6/9-21, 7/9-17, 8/8-15, 9/8-17-32, 10/8-17, 11/13-21-42-64, 12/17
Broward, Jack G. 2/28
Bryan, W. R. 4/33

Caldwell, Vice Adm. Turner F. 1/47
Carpenter, E. P. 8/46
Carpenter, Cdr. M. Scott 8/34
Carroll, Jerry C. 4/26
Coffee, Clark E. 3/35
Cooke, T. S. 8/46
Cox, Dale W. 2/31
Craig, Wm. L. 5/60
Cromie, William J. 9/28
Curtis, C. 4/33

Daugherty, F. M., Jr. 4/26
Dean, Edward K. 5/60
Dillon, E. L. 1/57
Donaldson, Glen B. 12/32

Eager, Cdr. W. J., Jr. 8/28
Edouard, Dr. Ned R. 1/35

Gay, S. M. 10/43
Gilbert, P. W. 2/35
Goodwin, Harold L. 1/42
Green, P. S. 5/48
Greiner, Leonard 5/52

Healy, Kathleen 9/59

Jones, Robert 3/22
Joseph, William 1/32, 2/22, 3/21, 4/21, 5/32, 6/25, 7/21, 8/23, 9/23, 10/23, 11/30, 12/25

Knollman, G. C. 5/48

Landis, Arthur T., Jr. 1/22, 2/18, 3/19, 4/23, 5/25, 6/18, 7/19, 8/21, 9/18, 10/19, 11/29, 12/19
Lavender, H. J., Jr. 2/35
Lawrence, Dr. Samuel A. 1/55

McGrath, Thomas D. 7/27
McHugh, Dr. J. L. 1/51
Martin, L. 4/33
Manzone, Capt. Walter F. 8/39
Methot, Douglas A. 6/28
Nahabedian, Ardashes 6/33
Neidell, Norman S. 10/28
Nicholson, Capt. Wm. A. 8/25

O'Hagan, Robert M. 10/35

Pauli, Denzil C. 8/34
Petteruti, A. J. 6/31
Pitts, Ray M. 1/40
Plamondon, W. N., Jr. 9/55

Soli, Dr. Giorgio 2/33
Strohlein, E. M. 12/26

Teeter, Robert G. 11/63
Thomas, L. R. 2/25
Tomas, J. M. 2/35
Tomsky, Cdr. Jackson M. 8/27

Waite, Warren A. 6/33
Waldron, Mark L. 6/33
Whitney, G., Jr. 4/33
Wischhoefer, William 3/22

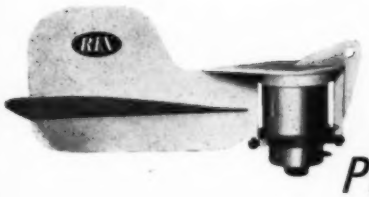
PART 3—SUBJECT INDEX

(continued on page 50)

(continued from page 46)

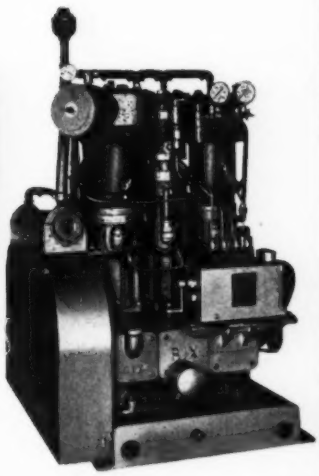
PART 3—SUBJECT INDEX

SUBJECT	MONTH/PAGE
acoustic,	
general	3/26, 5/54, 6/30, 11/54, 12/34
positioning underwater	9/53, 11/61
telemetry	6/9, 6/30, 7/11, 12/20
transducers	7/27, 11/54, 12/34
underwater telephone	10/34
wellhead control	6/35
acoustic energy, data processing	10/28
acoustic imaging, underwater	5/48
Ad Hoc Committee of 35, United Nations	1/12, 2/15, 4/13, 5/17, 5/23, 6/15, 6/23, 7/13, 9/21, 10/15
aircraft, ASW	11/64
Alaska	2/22, 9/23, 11/30
Alvin	2/31, 11/15
American Oceanology Association	10/13
American Society For Oceanography	6/11
ammonia, seawater	2/18
Antarctic research	10/40
aquaculture	11/29
antisubmarine warfare (ASW)	
acoustics	3/26
A-NEW system	11/64
forces	9/17
hardware	11/42, 12/34
operations	6/21, 11/48
R&D	10/17
Soviets	1/47, 11/42, 11/48
sonar	11/54, 12/34
sonobuoys	11/63
tactics	11/42
training, computers	10/30
Argentina	1/24, 2/15
ASR	6/28
Atlantic Equatorial Current	1/22
Atlantic Shelf, oil survey	9/23, 11/30
Australia	2/15, 3/15
AUTEC I & II	5/21
barnacles	5/25, 11/29
bathymetric chart	2/18, 11/91
bathyrheograph	8/21
batteries, submarine	7/23, 12/26, 12/32
batteries, undersea	12/22, 12/24, 12/26, 12/38, 12/40
Bay of Fundy, survey	10/55
beach ripple mark meter	7/19
Bering Sea, survey	1/22, 8/23
Bermuda	4/15
bioluminescence	2/33
Black Sea, chemistry	6/18
Boston Sea Rovers	5/15
budget, federal, oceanographic	1/12, 2/9, 2/13, 3/28, 6/11, 7/13, 8/12, 8/15, 11/13, 12/15
budget, Navy	1/26, 10/15, 11/13, 12/15
buoyancy, syntactic foam	6/33
buoys	2/49, 3/19
Brazil	8/17, 9/21
Bureau of Commercial Fisheries	1/51
cable system analysis, computers	10/43
calibration, deepsea thermometers	4/33
calibration, sonobuoys	11/63
Canada	1/24, 4/15, 5/23, 9/21
cancer, plankton	6/18
carbon dating	2/18
carbon dioxide, ocean water	9/18
carbon monoxide, sea water	5/25
Carolina Capes	4/23
CEDAM International	3/48
charting, sunken vessels	1/12
CHASE operations	4/26
chemical, oceanography	1/22, 5/25, 6/37
Chile	2/15, 4/15, 4/21
China	12/23
CICAR (Cooperative Investigations of the Carribbean & adjacent Regions)	10/21
Coast Guard, oceanography	1/16, 8/12
Coast & Geodetic Survey	8/12
Cobb Seamount	5/15, 11/15
Compass Distinguished Achievement Award	8/55
Compass Industrial Award	8/55
computer analysis, cable systems	10/43
computerized, drilling	6/25
computers	
ASW aircraft	11/64
marine sciences	10/8, 10/35
shipboard	4/39, 9/11, 10/25, 12/40
continental shelf map	11/29
control systems, acoustic	6/30
Cook Inlet, oil production	10/23
coring, sand	3/35
corrosion resistance materials	1/76
cruises, tourist	9/11
CURV	4/17, 11/21
data acquisition systems	10/28, 10/37, 10/56, 11/76
data processing	
digital	10/37, 10/56, 11/85, 11/76
seismic survey	10/28
deck gear, ASR	6/28
decompression, research	11/34
deep currents, tides	6/18
deep diving, compressed air	7/42
deep ocean drilling	5/89
Deep Ocean Technology program	5/15
Deep Quest	3/11
acoustic telemetry	7/11
deep submersible, pilots	9/11
deep well tests	6/25
defense, Navy (see Navy policy)	
DELOS, mobile instrumented steady air station	7/16
Democratic party, marine policy	9/15
Denmark	11/27
depth sensor	10/41
desalination	6/47
density, sea water	9/18
depth, ocean	4/11
destroyer, computers	10/30
DIFAR	5/27
digital computers, marine applications	10/25, 10/30, 10/35, 10/42
digital data system	10/37, 10/56, 11/76, 11/85
distress equipment, submarines	7/9
diver equipment	6/44
diving, offshore oil	9/32
diving safety	1/11
doppler sonar	11/41
DOSV (Deep Oceanographic Survey Vessel)	4/17, 12/17
dredging	1/38
drilling	
deep water	9/23
hard core	3/19
offshore oil	1/40, 9/29
DSRV (Deep Submergence Rescue Vehicle)	5/43
power system	7/34
simulator	10/22
DSRV II	1/70
DSSV (Deep Submergence Search Vehicle)	10/13, 12/32
DX destroyers	2/53, 3/53, 7/20
dynamic simulation, computers	10/30
East Germany	10/21
economics, oceanographic	1/59
Ecuador	1/24
education	
graduate programs	6/11, 12/19, 12/47
industry clinic	5/62
marine sciences	1/42, 2/11, 3/11, 5/13
ocean engineering	5/15, 7/43
saturation diving	6/39
technicians	12/13
Egypt	8/17, 12/23
electric motors, undersea	2/24
EROS Program	7/43



FOR SUB BOTTOM PROFILING AND HIGH PRESSURE BREATHING AIR

RIX COMPRESSORS STAND UP



Since 1878, Rix vertical designed air and gas compressors have stood up for better balance, longer life . . . and no down time. Vertical designed Rix compressors mean reduced cylinder wear because the pistons float—no egg shape scoring . . . no side thrust loads on shaft seals . . . gravity assures flow of moisture condensate, and no distortion of concentric mated parts. Rix continuous duty compressors custom tailored to your high pressure air requirements for sub bottom reflection profiling. Rix units also available for oil free pure breathing air/gas compressors. Pressures up to 20,000 PSI, capacities to 500 HP—Write or call Rix for complete technical information.

RIX INDUSTRIES 6448 Bay Street • Emeryville, California 94608 • (415) 658-5275

Circle No. 30 on Inquiry Card

ESSA (Environmental Science Service Adm.) 2/28, 12/24
Coast & Geodetic Survey 2/11
oceanography
exploration
minerals 1/38, 12/28
offshore oil 7/21, 9/29
exploratory fishing 3/19

FAO (Food and Agriculture Organization) 3/15, 5/23, 7/15, 8/18
federal budget (see budget)
Federal Republic of Germany 7/15
finance, oceanography 1/59
fish bites, mooring lines 9/18
fisheries,
general 1/11, 1/35, 4/11, 6/18, 8/57
Australia 9/54
crabs 2/18
developments 1/51
federal grants 11/58
Mexico 3/21
net loss 6/25
observation bell 10/13
research 5/93, 12/17
salinity data 5/60
scattering layers 10/19
sea food 4/36, 12/17
sound 11/29
trawl winch 9/62
tuna 9/18
world oceans 3/15
fish protein concentrate 2/11, 3/13, 4/21, 5/47, 11/17
fish tagging, chemically 11/29
Florida 3/46, 5/15
fluidic bow thruster 5/99
fluid breathing 4/21
France 1/24, 4/15, 5/23
frozen fish 6/18
fuel cells 12/32, 12/38
fur seals 10/19

gas, North Sea 7/21
geology, Gulf of Mexico 11/58
geology survey, computers 10/35
GOFAR Project 7/17
government,
budget (see budget)
marine policy 3/9, 3/13, 12/8
organization 1/55, 1/57
research 5/17
Great Britain 12/23
Gulf-Caribbean survey 3/49
Gulf of California, age 10/19
Gulf of Mexico 3/48, 5/32
Gulfrex 2/41
Gulf Stream 8/21

habitat, education 6/39
heat flow probe 8/21
Holland 11/27
hydraulic pumps, undersea 11/59
hydrogen breathing system 3/21
hydrogen/oxygen dive 3/49
hydrography, computers 10/35
hydrophones 2/47, 11/61

Iceland 7/19, 10/21
India 10/21, 11/27
image conversion, underwater 5/48
industrial development 5/93
instrumentation
acoustic 6/30
beach marks 7/19
calibration 4/33
depth sensor 10/41
fisheries search 5/60
hydrophones 2/47
offshore oil 12/25
submersibles 5/52
transducers 7/27
wave measurement 1/22, 4/11, 12/25
International Council for the Exploration of the Sea (ICES) 3/15
International Decade of Ocean Exploration 3/11, 4/13
International Oceanographic Commission (IOC) 1/24, 8/17
international policy, marine 4/13
investment, oceanography 1/59, 3/45
Ireland 11/27
IRLS, buoy 3/19
Israel 1/24, 10/21, 11/27, 12/23
Italy 2/15, 9/21

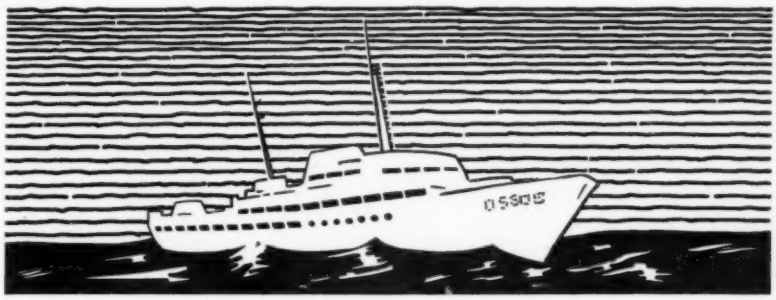
Japan 3/15, 4/15, 5/23, 8/21, 9/54, 11/27
Japan currents 8/21
JOIDES 5/89

Kuroshio Current 4/23
Lake Erie, oil survey 11/30
LAMPS, project 6/21
laser
shipbuilding tool 11/91
underwater 9/11
wave measurement 5/25
legislation 1/12, 1/55, 1/57, 12/8
Long Beach, deep drilling 11/30
Louisiana, offshore oil 8/23
luminescent marine life 2/33

magnetic pole, survey 10/17
Malta 8/17
Malta Resolution, UN (See United Nations)
manipulators, submersibles 3/23, 6/45
marine biology 1/51, 2/33, 2/35, 7/19, 10/35, 12/17
Marine Sciences Commission (see National Commission on Marine Science, Engineering and Resources)
Marine Sciences Council (See National Council on Marine Resources and Engineering Development)
marine science budget (see budget)
Marine Technology Society 2/43, 5/66, 8/53, 8/55, 9/39
Maritime Administration 8/12
market data, oceanography 5/62, 8/57, 12/21
material, corrosion resistance 1/76
medical research, undersea 11/15
mergers & acquisitions 1/70, 2/53, 3/53, 4/43, 5/93, 6/47, 7/45, 8/57, 9/71, 10/55, 11/85, 12/47
metric system 9/11
Mexico 2/15, 3/21, 6/23
microtektites 10/19
microwave positioning system 9/37
military policy, Navy 2/16
mineral recovery, undersea 1/38, 3/11, 9/59, 12/19, 12/28
mining, underwater 1/38, 3/11, 9/59
Monaco 3/15, 6/23
motors, undersea 2/24

National Commission on Marine Science, Engineering and Resources 1/12, 1/55, 3/9, 3/28, 6/11, 8/12, 11/17, 12/15
National Council on Marine Resources and Engineering Development 1/12, 1/57, 3/28, 6/11, 7/11, 8/12, 11/17
National Science Foundation 8/11
National Security Industrial Association, OSTAC 3/13
navigation,
computers 10/35, 12/25
satellite 4/11
undersea 11/61
Navy League 3/38
Navy policy 2/16, 11/42, 11/48, 12/17
Navy, saturation diving 3/17

(continued on page 52)



LET CORNING HELP YOU GET TO THE BOTTOM OF THINGS

. . . OCEANWISE

Corning has designed an all-glass polar-access sphere to house flashers, radio beacons, cameras, swallow floats and other electronic instruments. The new 10" sphere has a 2½" opening in the top for simple instrument insertion. Penetrations are made thru the steel plug in the opening.

Look at the advantages of Corning's polar-access sphere:

■ TRANSPARENT ■ SIMPLE, LEAKPROOF CLOSURE SYSTEM ■ MULTI-CYCLE LIFE AT ALL OCEAN DEPTHS ■ LOW MAINTENANCE, WILL NOT DETERIORATE ■ LOW INITIAL COST ■ NET BUOYANCY OF OVER 9 POUNDS ■ LARGER SIZES MAY BE SPECIFIED

Trust CORNING to protect your equipment . . . with glass. Send us details on your instrument case requirements.

CORNING Hydrospace Products

CORNING GLASS WORKS • CORNING, N.Y. 14830 • (607) 962-4444

Circle No. 31 on Inquiry Card

Undersea exploration implies undersea photography. And that means Nikonos: the amphibious 35mm camera created by Nikon specifically for underwater pictures.

The Nikonos requires no housing. It is impervious to corrosion, and is watertight-sealed against seepage for depths to more than 25 fathoms. With its extreme compactness, oversize setting controls and slightly negative buoyancy, the Nikonos handles more easily *under* water than many cameras do on land.

The Nikonos II offers several new improvements: a hinged pressure plate for faster film loading and a rapid film rewind crank. The flash-synch terminal has been made completely watertight, even with cover removed. And the lens aperture settings have click stops and larger, easier-to-read markings.

The Nikonos II uses interchangeable, high-resolution Nikkor optics. It is normally supplied with 35mm f2.5 Nikkor lens for in- or out-of-water pictures. And a 28mm f3.5 UW-Nikkor is available, designed expressly for underwater photography.

Price is $195 with 35mm f2.5 lens at Nikon photo dealers and selected diving equipment suppliers. For details, write: Nikon Inc., Garden City, New York 11530. Subsidiary of Ehrenreich Photo-Optical Industries, Inc. (In Canada: Anglophoto Ltd., P.Q.)

NIKONOS II
The Amphibious '35'

Circle No. 32 on Inquiry Card

Netherlands 7/15
new companies 1/70, 2/53, 3/53, 4/43, 5/93, 6/47, 7/45, 8/57, 9/71, 10/55, 11/85, 12/47
North Sea, oil & gas 8/23, 9/55, 10/23
Norway 3/15, 4/43, 7/15, 10/21
nuclear power 6/35, 12/24, 12/30
nuclear research sub NR-1 5/15
nutrient content, oceans 11/29

ocean engineering 5/15
ocean gases 2/18
oceanographic instruments, bathyrheograph 8/21
Oceanology International Industrial Conference 8/11
ocean pollution 5/17
oceanographic research 2/11
OECON 1/16
offshore mining (see mineral recovery)
offshore, oil & gas
- diving 9/32
- drilling 1/40, 3/21, 7/20, 12/13, 12/24
- economics, marketing 1/32, 4/21, 7/21, 9/29
- federal leases 4/9, 4/21, 7/13
- lease sales 6/11
- manpower 9/8
- nuclear powered wellhead 7/21
- pipelaying 4/24
- production equipment 7/21, 9/29, 9/64, 10/39 12/13
- remote systems 6/35
- submerged production 1/40, 7/21, 10/39, 12/13

oil storage, sub-sea 6/25
oil storage, underwater 8/23
organic matter, sea water 5/25
ORION aircraft, ASW 11/64
OSTAC, NSIA 3/13
oxygen consumption, marine life 8/21
oxygen solubility tables 7/19

Pacific, oceanographic observations 1/16
Peru 4/21
pesticides 6/37, 7/19
petroleum, offshore (see offshore, oil & gas)
photography, underwater 3/11
physical oceanography, computers 10/35
pipe anchor, underwater 9/64
pipeline, offshore oil 4/21, 4/24, 7/21, 10/23, 11/36
PISCES 11/75
plankton, cancer 6/18
pogonophores 8/21
Poland 2/15
policy, government, marine 1/55, 1/57, 3/9, 3/13
pollution control 5/15, 12/40
PONCHO (Productivity of nitrogen and chemistry of oxygen) 7/19
Poseidon 11/52
Portugal 1/24
position sensing system, undersea 9/37, 9/53
power systems, DSRV 7/34
pressure tanks 2/31
protein concentrate 2/11
pumps, undersea 11/59

ranging system, underwater 11/61
recovery, ocean minerals 1/38, 3/11, 9/59
regulations, vessels 3/11
relocator, offshore wellhead 9/64
Republican Party, marine policy 9/15
research
- buoys 2/49
- computers 10/30, 10/35
- fisheries 1/51
- physical oceanography 1/35
- world oceans 2/28

research submarine AGSS-555 7/24
Rice University, Mexican research 3/21
rivervine warfare 6/21
royalties, offshore oil (see offshore)

safety, diving 1/11
salinity 1/22, 3/19, 5/60
salvage, WAHINE 9/54
sand coring 3/35
Santa Barbara tract, drilling 5/32, 8/23, 11/30
satellite mapping, oceans 3/48
satellite navigation 5/32, 10/30, 10/35, 10/37, 11/23
saturation diving 3/17, 3/21, 3/41, 3/49, 4/11, 4/21, 6/39, 8/11, 9/32
scallop shells 10/19
S.C.O.R. (Special Committee on Oceanic Research) 8/17
Scorpion 7/9, 7/17, 12/13
Scotland 5/23, 7/15
sea flow spreading 2/18, 4/23
Sea Grant College Program 1/42, 3/13, 5/13, 7/11, 8/12
SeaLab III
- aquanauts 8/44
- complex 8/28
- contractors 8/49
- experiments 8/34
- funding 8/8
- logistic & surface support 8/46, 12/47
- medical aspects 8/36
- organization 8/26
- purpose 8/25
- schedule 3/11, 3/17, 8/11, 10/13, 12/13
- training & equipment 8/39, 12/47

sea level measurement 4/23, 11/29
Seamount, Kane 11/21

(continued on page 58)

Industralease
Automated & Scientific Equipment Corporation
Subsidiary of Executive Equipment Corp.
1220 Northern Blvd., Manhasset, N.Y. 11030

Oceanographic Equipment Division
Specialists in Applying the Advantages of Equipment Leasing to the Ocean Industries

We Are Proud To Announce
The Appointment Of

Ocean Science Services, Inc.
Palo Alto, California 94306 • Phone: (415) 328-6262

As Our West Coast Representatives

Circle No. 37 on Inquiry Card

SERIES 110 PACKAGING SYSTEM
Hardware with a high ESP*

If you have properly designed circuits .....all field failures are ultimately mechanical!!!!
Consider this equation.

$$\frac{\text{Quality of Your Packaging}}{\text{Operational Environment}} = \text{ESP}^*$$

*Equipment Survival Probability

WET
WATERPROOF ENGINEERING TECHNOLOGY, INC.
5841 MISSION GORGE, SAN DIEGO, CALIFORNIA 92120
Telephone: (714) 279-0900

Circle No. 38 on Inquiry Card

(continued from page 52)

search, sunken vessels 1/12, 4/26, 12/13
sea salts 6/18
Sea Use, project 5/15, 11/15
seismic profiling system 5/93
seismic sound sources 8/11
seismic survey, data processing 10/28
seismic system, shallow water 9/63
self powered instruments 1/70
shark, reaction study 2/35
shipboard computers
  applications 10/30, 10/35
  Scripps 10/42
  Woods Hole 10/25
ship schedules 11/36
Ships of Opportunity 7/19
signal generator, sonobuoy testing 11/63
silica, ocean forms 10/19
SNAP, generator 11/21
sonar, doppler 11/41
sonar transducers 7/27, 11/54, 12/34
sonobuoys 5/27, 11/42, 11/63
sound loss, undersea 9/54
Soviet,
  ASW programs 1/47, 11/43, 11/48
  marine sciences 1/47, 5/23, 6/23, 9/21, 10/21 12/23
space-sea, combined research 11/15
specific volume, sea water 9/18
STEVENSON, sinking 1/12, 4/26
storage, underwater 1/72, 6/43
Stormfury project 9/54
structures, offshore oil 4/24
submarines,
  ASW 11/43, 11/48
  location 7/9
  Navy programs 10/15
  rescue ship 6/28
submerged oil leases 6/25
submerged offshore oil center 10/39
submersible chamber 3/21
submersibles
  manipulators 3/23
  motors 2/24
  PISCES 11/75
  power sources 12/26, 12/32
sunken vessel, location 1/12, 4/46
surface ships, ASW 11/42
surf observations 11/29
survey, ocean 1/35
swimmer support systems 6/43
syntactic foam 6/33

tanker construction 11/41
Tektite 6/17, 11/15
telemetry, acoustic 6/30, 12/20
television, underwater 12/20
test facility, underwater 6/17
testing, sonobuoys 11/63
Texas, offshore oil 9/23, 10/23
Thailand 3/11, 5/23
thermoelectric generator 12/20
thermometer, calibration 4/33
thermoplastic, foam 6/33
thruster, fluidic 5/99
titanium 2/31
tools, laser 11/91
torpedoes, ASW 3/26, 11/42
transducers 5/43, 5/93, 7/27
Transit, satellite system 4/11
Tsunami research 1/22
tuna fisheries 3/19

Ukranian S.S.R. 10/21
ultrasonic flowmeter, decompression 11/34
undersea
  festival 7/11
  mining 1/38
  missiles 5/52
  museum 3/11
  sound 6/9
  storage 1/72
  telephone 10/34
  test facility 6/17
Underwater Demolition Teams 4/17, 8/15
UNESCO 6/23, 8/18
United Kingdom 4/15, 6/23, 7/15, 8/17
United Nations, marine affairs 1/12, 2/15, 4/13, 5/17, 5/23, 6/15, 6/23, 7/13, 9/21, 10/15, 12/23
unmanned submersibles 5/52
upper mantle 3/19
USS DOLPHIN, AGSS-555 7/24
USSR (see Soviet)

vessel position, computer 10/30
vessel, regulations 3/11
Vibroseis 10/28
VSX, ASW aircraft 1/26, 9/15

Washington, state oceanography 5/15
wave research 1/22, 4/23, 5/25
weather station, automatic 11/23
welding, underwater 3/21, 11/23
West Germany 4/15

FOR SALE
Valuable Reference Materials
Detailed Listing and Order Blank

see page 45